

What is claimed is:

1. A method to introduce a selected nucleic acid sequence into an airway epithelial cell comprising:

contacting the airway epithelial cell with a pseudotyped retrovirus, wherein the pseudotyped retrovirus comprises a glycoprotein in which a portion of an O-glycosylation region within the glycoprotein has been deleted and a retroviral capsid comprising the selected nucleic acid sequence.

2. The method according to claim 1, wherein the glycoprotein has reduced glycosylation when compared to glycosylation of a glycoprotein in which a portion of the O-glycosylation region has not been deleted.

3. The method according to claim 1, wherein the glycoprotein is a filoviral glycoprotein.

4. The method according to claim 1, wherein the filoviral glycoprotein is a Marburg virus glycoprotein.

5. The method according to claim 3, wherein the filoviral glycoprotein is an Ebola virus glycoprotein.

6. The method according to claim 5, wherein the Ebola virus glycoprotein lacks amino acids 309-489.

7. The method according to claim 1, wherein the retroviral capsid is a lentiviral capsid.

8. The method according to claim 7, wherein the lentiviral capsid is from feline immunodeficiency virus.

9. The method according to claim 1, wherein the airway epithelial cell is a mammalian airway epithelial cell.

10. The method according to claim 1, wherein the airway epithelial cell is a human airway epithelial cell.
11. The method according to claim 1, wherein the pseudotyped retrovirus is contacted with the airway epithelial cell on an apical surface of the airway epithelia cell.
12. The method according to claim 1, wherein the pseudotyped retrovirus is contacted with the airway epithelial cell in vivo, in vitro or ex vivo.
13. The method according to claim 1, further comprising contacting the airway epithelial cell with an agent that disrupts junctions between cells.
14. The method according to claim 13, wherein the airway epithelial cell is contacted with the agent before, during or after the airway epithelial cell is contacted with the pseudotyped retrovirus.
15. The method according to claim 13, wherein the agent that disrupts junctions between cells is EGTA, EDTA or sodium citrate.
16. The method according to claim 1, wherein the selected nucleic acid sequence is present within the airway epithelial cell prior to being contacted with the pseudotyped retrovirus.
17. The method according to claim 1, wherein the selected nucleic acid sequence is not present within the airway epithelial cell prior to being contacted with the pseudotyped retrovirus.
18. The method according to claim 1, wherein the selected nucleic acid sequence encodes cystic fibrosis transmembrane regulator protein (CFTR).

19. A method to reduce or eliminate symptoms of cystic fibrosis in a mammal comprising:

contacting an airway epithelial cell of the mammal with a pseudotyped retrovirus that comprises a glycoprotein in which a portion of an O-glycosylation region within the glycoprotein has been deleted and a retroviral capsid that comprises a nucleic acid sequence that encodes a cystic fibrosis transmembrane regulator protein.

20. The method according to claim 19, wherein the glycoprotein has reduced glycosylation when compared to glycosylation of a glycoprotein in which a portion of the O-glycosylation region has not been deleted.

21. The method according to claim 19, wherein the glycoprotein is a Marburg virus glycoprotein.

22. The method according to claim 19, wherein the glycoprotein is an Ebola virus glycoprotein.

23. The method according to claim 19, wherein the Ebola virus glycoprotein lacks amino acids 309-489.

24. The method according to claim 19, wherein the retroviral capsid is a lentiviral capsid.

25. The method according to claim 24, wherein the lentiviral capsid is from feline immunodeficiency virus.

26. The method according to claim 19, wherein the mammal is a human.

27. The method according to claim 19, wherein the pseudotyped retrovirus is contacted with an apical surface of the airway epithelia cell.

28. The method according to claim 19, further comprising contacting the airway epithelial cell with an agent that disrupts junctions between cells.
29. The method according to claim 28, wherein the airway epithelial cell is contacted with the agent before, during or after the airway epithelial cell is contacted with the pseudotyped retrovirus.
30. The method according to claim 28, wherein the agent that disrupts junctions between cells is EGTA, EDTA or sodium citrate.